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STRUCTURE OF AUTOMATIC CONTROL SYSTEMS.(U)
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I. INTRODUCTION

This is an interim scientific report for AFOSR Grant No. 77-3176 covering the period October 1, 1978 to September 30, 1979. The work described below has been undertaken in accordance with our October 1, 1978 starting date research proposal.

II. COMPLETED WORK

A. Research Reports and Papers

During the reporting period, research leading to two technical reports was completed.

[1] "Open Problems in the Theory of Parameter Adaptive Control," Proceedings 1978 IEEE Conference on Decision and Control, January 1979.

[2] "Global Stability of Parameter-Adaptive Control Systems," IEEE Transactions on Automatic Control, to appear.

B. Presentations

[1] "Open Problems in the Theory of Parameter Adaptive Control," Round Table on Adaptive Control, 1978 IEEE Conference on Decision and Control, San Diego, January 1979.

[2] "Decentralized Control," Lund Institute of Technology, Lund, Sweden, March 1979.

[3] "Global Stability of Parameter Adaptive Control Systems," Lund Institute of Technology, Lund, Sweden, March 1979.

[4] _____, Harvard University, April 1979.

[5] _____, Purdue University, September 1979.

[6] _____, Notre Dame University, September 1979.

C. Other Activities

During the reporting period, the principal investigator participated in two DOD sponsored workshops on adaptive control, the first in May at the University of Illinois under AFOSR sponsorship, the second at Yale in August under ONR sponsorship.

III. WORK IN PROGRESS

In accordance with Part A of our proposal we are attempting to characterize those linear system parametrizations for which parameter adaptive control is possible. Under Part B of our proposal, we are attempting to develop a realization theory for linear analytic systems with finite Volterra series, using only linearly algebraic constructions. The principal investigator is continuing to devote some of his time to the completion of a book on multivariable control.

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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

The work in progress includes characterization of linear system parametrizations for which parameter adaptive control is possible, and ~~developing~~ a realization theory for linear analytic systems with finite Volterra series, using only linearly algebraic constructions.

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